GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

ENERGY, INFRASTRUCTURE & INVESTMENT DEPARTMENT - Introducing Andhra Pradesh Wind-Solar Hybrid Power Policy-2018 to encourage Hybrid Renewable Energy Power - Orders – Issued.

ENERGY, INFRASTRUCTURE & INVESTMENT (PR.II) DEPARTMENT

G.O.MS.No. 3 Dated: 03-01-2019

Read the following:

1. National Wind-Solar Hybrid Policy notified by the MNRE, GoI, New Delhi vide letter No.238/78/2017-Wind dated 14.05.2018.
2. The VC&MD, NREDCAP, File No. NREDAP-14023/1/2018.
3. The GA(Cabinet) Dept., U.O.Note.No.537/2018, dated:27.12.2018.

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ORDER :

Government of Andhra Pradesh is keen to harness the huge solar and wind potential of the State to meet its growing energy demands in an environmentally sustainable manner. Several initiatives such as investor friendly solar and wind power policies, large scale solar park(s) development, green corridor investment for power evacuation and power procurement through PPA's with APDISCOMs have been undertaken to promote RE capacity addition. The Government of Andhra Pradesh has set a target to achieve 18,000 MW of renewable energy capacity by the year 2021-22, which is 10 % of the national target.

2. GoAP is keen to encourage wind solar hybrid projects in order to harness the combined potential of these clean energy sources in an optimal manner and to help contribute towards grid stability . It is proposed to promote Wind- Solar Power projects, inline with National Wind Solar Hybrid Power Policy notified by the MNRE, GoI, New Delhi, to enable better utilization of common infrastructure and related facilities.

3. Government, after detailed discussions on the proposal received in reference 2nd read above, with various stakeholders viz., APTRANSCO., APDISCOMs, NREDCAP, Solar and Wind Power Developers and Associations , hereby issue the Andhra Pradesh Wind-Solar Hybrid Power Policy-2018 as mentioned below:

ANDHRA PRADESH WIND-SOLAR HYBRID POWER POLICY – 2018

Introduction

1.1 Government of Andhra Pradesh is keen to harness the huge solar and wind potential of the State to meet its growing energy demands in an environmentally sustainable manner. Several initiatives such as investor friendly solar and wind power policies, large scale solar park(s) development, green corridor investment for power evacuation and power procurement through PPA's with APDISCOMs have been undertaken to promote RE capacity addition. The Government of Andhra Pradesh has set a target to achieve 18,000 MW of renewable energy capacity by the year 2021-22, which is 10 % of the national target.

1.2 Solar and wind power potential in AP is concentrated in the Rayalaseema belt and studies reveal that their generation profile is complementary to each other. A hybrid wind solar project can help in optimal utilization of transmission infrastructure. Further, under the AP Wind Power Policy-2015, it is proposed to promote Solar and Wind Hybrid Power projects to enable better utilization of common infrastructure and related facilities. The existing wind farms may have scope of adding solar PV capacity and similarly there may be wind potential in the vicinity of existing solar PV plant. GoAP is keen to encourage wind solar hybrid projects in order to harness the combined potential of these clean energy sources in an optimal manner and to help contribute towards grid stability.

1.3 Suitable policy interventions are therefore, required not only for new Wind-Solar Hybrid Plants but also for encouraging hybridization of existing wind and solar plants.

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1.4 Ministry of New and Renewable Energy (MNRE), Government of India has notified National Wind – Solar Hybrid Policy vide letter No.238/78/2017-Wind dated 14.05.2018 with the main objective to provide a frame work for promotion of large grid connected wind-solar PV hybrid system for optimal and efficient utilization of transmission infrastructure and land, reducing the variability in renewable power.

1.5 Taking into consideration the National Wind Solar Hybrid Policy, it is felt necessary to announce AP Wind Solar Hybrid Power Policy to encourage hybrid renewable energy power projects for optimal utilization of transmission infrastructure and also reduce variability in renewable power generation and achieving better grid stability.

2. Objectives and Goals

i. The main objective of the Policy is to provide a framework for promotion of large grid connected wind-solar PV systems for optimal and efficient utilization of transmission infrastructure and land, reducing the variability in renewable power generation and thus achieving better grid stability.

ii. Optimal utilization of transmission infrastructure being built by State Utility to evacuate renewable power.

iii. Policy aims to encourage new technologies, methods and way-outs involving combined operation of wind and solar PV plants, and other emerging technologies like energy storage systems.

iv. Target to procure the Contracted capacity of 5,000 MW at desired CUF under this policy in next 5 years or till such time a new policy is issued, as per power and energy requirements including time/season of procurement of distribution companies.

3. Period of Enforcement

This policy shall remain applicable for a period of five (5) years from the date of issuance and/ or shall remain in force till such time a new policy is issued or this policy is withdrawn, modified or superseded by the Government.

The Wind Solar Hybrid Projects that are commissioned during the operative period shall be eligible for the incentives declared under this policy, for a period of 10 years from the date of commissioning.

4.Wind-Solar Hybrid System

a. Under the category of wind-solar hybrid power plants, Wind turbine generators and Solar PV systems will be configured to operate at the same point of grid connection. There can be different approaches towards integrating wind and solar depending upon the size of each of the source integrated and the technology type.

b. In case of fixed speed wind turbines connected to grid using an induction generator, the integration can be on the HT side at the AC output bus. However, in case of variable speed wind turbines deploying inverters for connecting the generator to the grid, the wind and solar PV system can be connected to the intermediate DC bus of the AC-DC-AC converter.

c. The second important aspect would be related to the sizing – which would depend on the resource characteristics. In order to achieve the benefits of hybrid plant in terms of optimal and efficient utilization of transmission infrastructure and better grid stability by reducing the variability in renewable power generation, in the locations where the wind power density is quite good, the size of the solar PVs capacity to be added as the solar-hybrid component could be relatively smaller. On the other hand, in case of the sites where the wind power density is relatively lower or moderate, the component of the solar PV capacity could be relatively on a higher side.

d. In Case of Wind –Solar Hybrid Project(s), both Wind and Solar project(s) should connect to grid in the same region at 132 KV and above either through individual or common pooling station. Such project(s) must give the common scheduling and forecasting for the Wind and Solar Project(s) and further at any point of time should not exceed the PE capacity allocated jointly between Wind and Solar Project(s).

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However, a wind-solar plant will be recognized as Hybrid Plant if the rated power capacity of one resource is at least 25% of the rated power capacity of other resource. Further, each 1 (one) MW of **contracted** Wind Solar Hybrid Project shall achieve a minimum CUF of 40%. In case of projects which achieve higher CUF shall be given preference.

5. Implementation Strategy

5.1 The implementation of wind solar hybrid system will depend on different configurations and use of technology as detailed below:

a) Wind-Solar Hybrid- AC integration

In this configuration, the AC output of both the wind and solar system is integrated either at LT side or at HT side. In the later case, both systems use separate step-up transformer and HT output of both the systems is connected to common AC Bus-bar or at interconnection point. Suitable control equipment is deployed for controlling the power output of hybrid system.

b) Wind-Solar Hybrid- DC integration

DC integration is possible in case of variable speed drive wind turbines using converter-invertor. In this configuration the DC output of the both the wind and solar PV plant is connected to a common DC bus and a common invertors suitable for combined output AC capacity is used to convert this DC power in to AC power.

5.2 New wind-solar hybrid plants

New wind-solar hybrid projects shall be encouraged with following provisions:-

i. The hybrid power generated from the wind-solar hybrid project may be used for (a) captive purpose; (b) sale to third party through open access; (c) sale to the distribution company (ies) either at project specific tariff determined by the APERC or at tariff discovered through transparent bidding process; or (d) sale to the distribution company (ies) at APPC under REC mechanism and avail RECs.

ii. The power procured from the hybrid project may be used for fulfilment of solar RPO and non-solar RPO in the proportion of rated capacity of solar and wind power in the hybrid plant respectively.

iii. For procurement of hybrid power through transparent bidding process different parameters may be used. Parameters that may be considered for bidding could be capacity delivered at grid interface point, effective CUF and unit price of electricity.

iv. Government entities may invite bids for new hybrid plants keeping qualifying criteria such as those discussed in iii above, the tariff being the main criteria for selection.

5.3 **Hybridization of existing Wind/Solar PV plants**.

Existing wind or solar power projects, willing to install solar PV plant or WTGs respectively to avail benefit of hybrid project, may be allowed to do so with following Conditions:

i. No additional connectivity/transmission capacity charges shall be levied by the respective transmission entity for hybridisation at existing wind/solar PV plants if already granted transmission connectivity/ access is being used. Transmission charges may be applicable for the additional transmission capacity/ access granted as per prevailing regulation.

ii. In case capacity margins are available at the receiving transmission sub-station of respective transmission entity, at which the existing wind/solar projects is connected, additional transmission capacity/access may be allowed subject to its technical feasibility. In such a case, any transmission augmentation required up to the receiving transmission substation will be the responsibility of project developer.

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iii. In case of AC integration assessment of solar and wind power injected from the hybrid project in to the grid will be worked out by apportioning the reading of main meter installed at the receiving station on the basis of readings of ABT meters installed on LT or HT side of the wind and solar PV plant as the case may be.

iv. In case of DC integration assessment of solar and wind power injected from the hybrid project in to the grid will be worked out by apportioning the reading of main meter installed at the receiving station on the basis of readings of DC meters installed at the DC output of the wind and solar PV plant. Till such time the methodology for DC metering of hybrid systems and standards and regulations are framed for DC meters, only AC integration will be permitted.

v. The additional solar/wind power generated from the hybrid project may be used for

(a) captive purpose; (b) sale to third party through open access; (c) sale to the distribution company (ies) either at project specific tariff determined by the APERC or at tariff discovered through transparent bidding process; and (d) sale to the distribution company (ies) at APPC under REC mechanism and avail RECs. For bidding purpose, State or Central entities may bid for hybridization of existing projects connected to InSTS or ISTS as the case may be.

vi. Government entities may also invite bids for hybridisation of existing wind and solar plants with tariff being the main criteria for selection.

vii. The additional solar/wind power procured from hybrid project shall be used for fulfilment of solar/non-solar RPO as the case may be.

5.4 Energy Banking and Drawal

Banking of 100% of energy shall be permitted during all 12 months of the year, based on the feasibility and prior approval of APTRANSCO/APDISCOMs. Banking charges shall be adjusted in kind @ 5% of the energy delivered at the point of drawal. The banking year shall be from April to March.

Energy injected into the grid from date of synchronization to Commercial Operation Date (COD) will be considered as deemed energy banking. Energy settlement shall be done on monthly basis. The unutilized banked energy shall be considered as deemed purchase by Discoms at 75% of the Average Pooled Power Purchase Cost as determined by the APERC for the applicable year. The payment for the deemed purchase of un-utilized banked energy shall be capped to 10% of the total banked energy during the applicable year.

5.5 Energy Storage

Any Energy storage technologies like Mechanical, Chemical, Compressed Air, Hydrogen, Pumped Storage,etc may be added to the hybrid project (i) to reduce the variability of output power from wind solar hybrid plant; (ii) providing higher energy output for a given capacity (bid/ sanctioned capacity) at delivery point, by installing additional capacity of wind and solar power in a wind solar hybrid plant; and (iii) ensuring availability of firm power for a particular period.

Bidding factors for wind solar hybrid plants with storage may include minimum firm power output throughout the day or for defined hours during the day, extent of variability allowed in output power, unit price of electricity, etc.

6. Round The Clock Power

The projects for delivery of power Round The Clock (RTC) by adopting Wind-Solar Hybrid Projects with (a) Energy Storage Systems (b) Bundling with Clean Resources like Gas, (c) Flexibility by balancing with power generated by APGENCO or Independent Power Producers (IPPs), will be given priority for off taking of power by APDISCOMs or APGENCO, PE connectivity by APTRANSCO and issuing various clearances and facilities including "MUST RUN STATUS" (d) For Round The Clock (RTC) power by Wind-Solar Hybrid projects, at least 51% of the energy requirement should be from the Renewable Energy projects (Solar/Wind).

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7.Regulatory requirements

The APERC, Central Electricity Authority and CERC shall formulate necessary standards and regulations including metering methodology and standards, forecasting and scheduling regulations, REC mechanism, grant of connectivity and sharing of transmission lines, etc. for wind-solar hybrid systems.

8. Standard and quality

For wind turbines, solar modules and balance of systems, the technical guidelines issued by the Ministry of New and Renewable Energy (MNRE), from time to time for grid connected systems will be followed.

9. Incentives

The Government will encourage development wind-solar hybrid systems through different schemes and programmes. All fiscal and financial incentives available to new wind and new solar power projects will also be made available to new hybrid projects in addition to the fiscal and financial incentives announced in this policy .

After bi-furcation of the state, there is necessity to attract investments in manufacturing sector for overall development of State and to create the employment. The Government intends to promote wind turbine and solar manufacturing facilities that can contribute towards wind and solar sector development in the State and create employment opportunities In addition to the incentives applicable for promoting manufacturing as per the existing industrial, solar and wind power policies, it is proposed to provide preference in allotment of the wind solar hybrid capacity for projects that come up based on manufacturing facilities located within the State after bifurcation and which are set up as per the investments approved by the Government. Further, the projects which are developed by the manufacturers are given preference for sale of power to distribution company (ies) either at project specific tariff determined by the APERC **(OR)** a tariff discovered through transparent bidding process **(OR)** at APPC under REC mechanism and avail RECs. In case of utilization of power for captive use or third party sale, preference will be given for extending energy banking facility based on feasibility and prior approval of APTRANSCO/APDISCOMs.

Further, in respect of Wind Solar Hybrid Power Projects, the following additional incentives shall be provided,

a. Transmission and Distribution charges shall be exempted upto 50% of the applicable charges for wheeling of power generated from new Wind – Solar Hybrid Power Projects within the State. There will be no transmission charges for connectivity to the nearest Central Transmission Utility (CTU) via State Transmission Utility (STU) network for inter-state wheeling of power subject to the consent of APERC.

b. In respect of new wind or solar projects in the existing solar or wind project sites respectively (which will make it hybrid) the plant will continue to enjoy all the incentives they were getting from the previous policies (“Andhra Pradesh Solar Policy 2015” and “Andhra Pradesh Wind Policy 2015”) only till the balance operative period as per the previous policies.

c. Energy injected into the grid from date of synchronization to Commercial Operation Date (COD) will be considered as deemed energy banking. The unutilized banked energy shall be considered as deemed purchase by Discoms at 75% of the Average Pooled Power Purchase Cost as determined by the APERC for the applicable year. Energy settlement shall be done on monthly basis.The payment for the deemed purchase of un-utilized banked energy shall be capped to 10% of the total banked energy during the applicable year.

d. 50% of applicable Electricity duty shall be exempted for captive consumption, sale to DISCOMs and third party sale provided the source of power is from wind - solar hybrid power projects set up within the State.

e. 50% of the Cross subsidy surcharge shall be paid for third party sale provided the source of power is from Wind- Solar Hybrid Power Projects setup within the State.

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f) Supervision charges

Wind-solar hybrid power projects will be exempted from paying the Supervision charges to APTransco/Discom(s) only in case of transmission of power from State Transmission Utility (STU) to Central transmission utility (CTU)

g) Deemed Industry Status

Generation of electricity from wind-solar hybrid power projects shall be treated as eligible industry under the schemes administered by the Industries Department and incentives available to industrial units under such schemes shall be available to the Wind solar power producers subject to the payments from the Energy Department. In addition, the services of the single desk portal can also be extended for obtaining necessary clearances, if any.

h) Deemed Public Private Partnership (PPP) Status

Deemed PPP status shall be provided for projects coming up as wind-solar hybrid power projects as per this policy.

i) Non Agriculture Status

Deemed Non-Agricultural (NA) status for the land where wind-solar hybrid power projects will be accorded, on payment of applicable statutory fees.

j) Pollution Clearance

Wind-solar hybrid power projects will be exempted from obtaining any NOC/Consent for establishment under pollution control laws from AP Pollution Control Board.

k) Must run status

All Wind- Solar hybrid power projects shall be treated as "MUST RUN" power plants and shall not be subjected to 'Merit Order Despatch (MOD) principles'

10. Nodal Agency

i. NREDCAP shall act as a Nodal Agency under this policy and as decided by the government from time to time.
ii. Nodal Agency and/or designated offices by the Nodal Agency shall be responsible for facilitating single window clearance of projects for the following activities:

a. Registration of projects
b. Allotment of capacity of projects
c. Processing of proposals for allotment of revenue land or Forest land, as per the provisions of AP Wind Power Policy and AP Solar Power Policy.
d. Arranging approval for power evacuation plan and open access.
e. Arranging other statutory clearances/approvals if any.
f. Co-ordination with MNRE/SECI/APTRANSCO/ APDISCOMs and other central and state agencies.

11. Administrative approval

a. The proposals received from eligible developers as per the provisions of this policy along with non-refundable processing fee of Rs. 25,000/- per MW will be processed by NREDCAP duly taking into consideration of the policies of Government of India, Government of AP, provision of signing of PPAs, prevailing RPPO against requirement as per the regulations and availability of grid feasibility for evacuation of power from the hybrid power plants. NREDCAP will apprise whether the proposal is technically, financially and commercially feasible. NREDCAP will also apprise whether the proposer has the required technical, commercial, managerial and financial capability to execute

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the project. NREDCAP will apprise the existing installed capacity, existing generating capacity, required installed capacity and generating capacity. On allotment of capacity, the allotment fee of Rs.1,50,000 per MW shall be paid at the time of entering into agreement. The project shall be completed within 24 months from the date of allotment. The project developer shall also furnish performance bank guarantee equivalent to Rs.2.00 lakhs per MW in favour of NREDCAP.

b. Further, GoAP will accord the sanctions for Wind Solar Hybrid Projects to Developers/manufacturers based on recommendation by NREDCAP after appraising their proposal, DPR submitted, technical & financial capabilities, investment and manufacturing outlay and creation of employment in the State of Andhra Pradesh.

c. The off-take of power from Wind solar Hybrid Projects by APDiscoms will be subject to prior approval from GoAP and also by APERC.

12. Research and Development

Government will support the technology development projects in the field of wind-solar hybrid systems. Besides, support will be provided for development of standards for hybrid systems.

13. Power to remove difficulties

If any difficulty arises in giving effect to this policy, energy department is authorized to issue clarification as well as interpretation to such provisions, as may appear to be necessary for removing the difficulty either on its own motion or after hearing those parties who have represented for change in any provision.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

AJAY JAIN
PRINCIPAL SECRETARY TO GOVERNMENT

To
The Vice Chairman & Managing Director, NREDCAP, Tadepalli, Guntur.
The Chairman, APPCC, Vijayawada.
The Chairman & Managing Director, APTRANSCO, Vijayawada.
The Managing Director, APGENCO, Vijayawada.
The Secretary, APERC, Hyderabad
The CMDs, of APSPDCL, Tirupathi / APEPDCL, Visakhapatnam.
All Collectors & District Magistrates in the state.
The Principal Secretary to Government, Revenue Department.
The Principal Secretary to Government, Industries Department
The Principal Secretary to Government, EFS&T Department.
Copy to:
The Secretary, MNRE, GoI, New Delhi.
The Prl., Secretary to Hon'ble C.M.
The Principal Secretary to Govt., Finance (FMU-Energy,I&I) Department.
The Secretary, LAW Dept.,
The OSD to C.S.
The OSD to Minister (Energy)
The P.S. to Prl., Secretary, Energy, I&I Department.
The Adviser for Power Sector.
The GA(Cabinet) Dept.,
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SECTION OFFICER